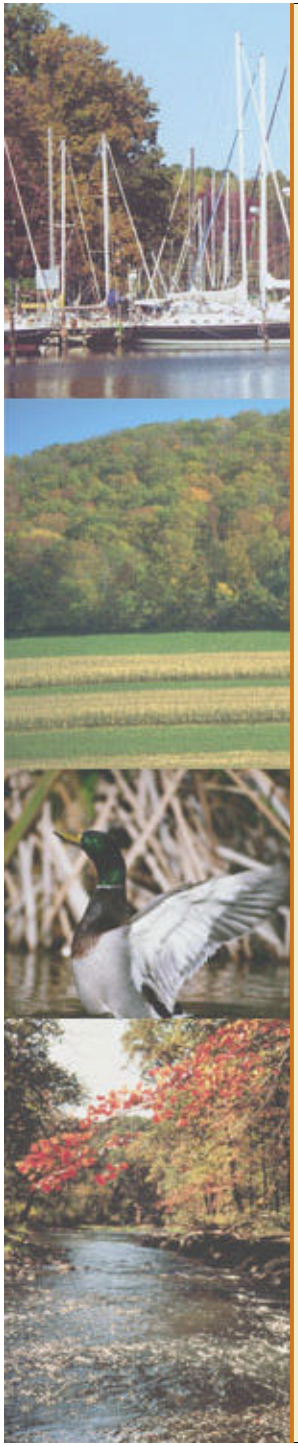
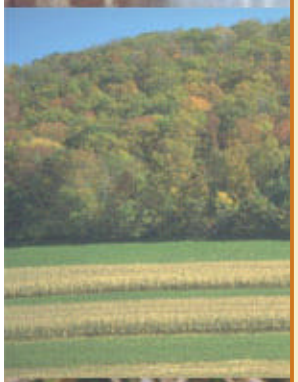


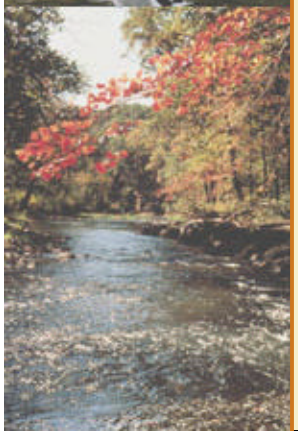
Tributary Strategies

Focus on the Bay and your local rivers

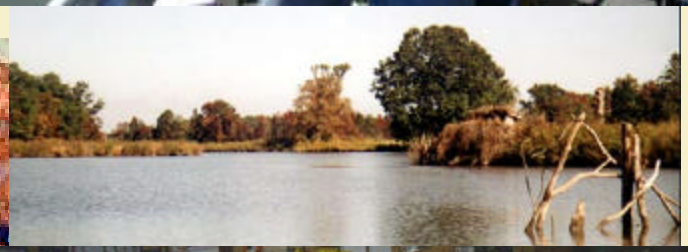
Staff Workshop on New Planning Law

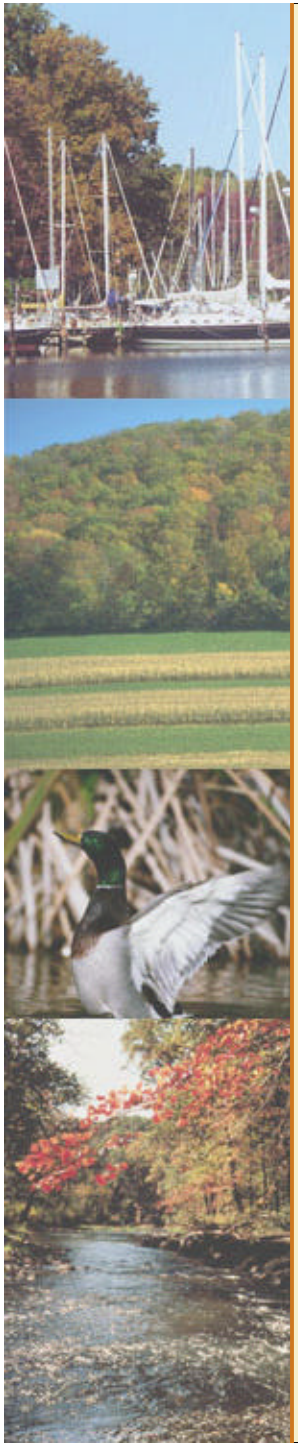
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES





The Chesapeake Bay is North America's largest and most biologically diverse estuary, home to more than 3,600 species of plants, fish and animals.

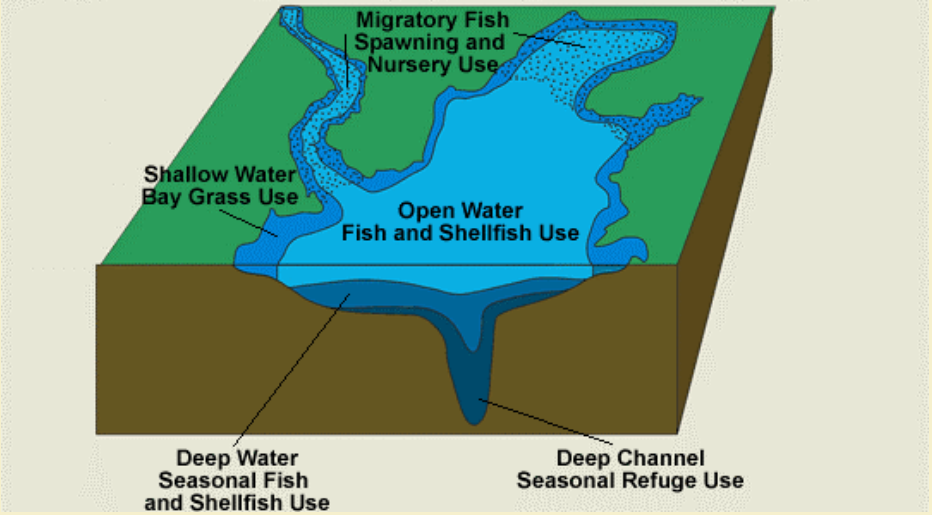


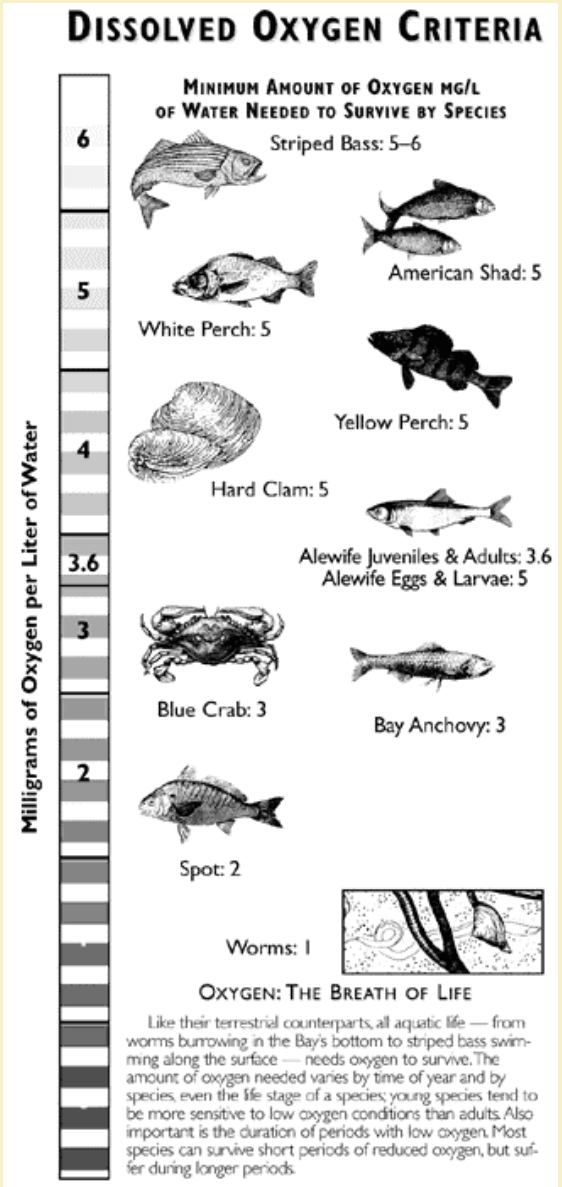


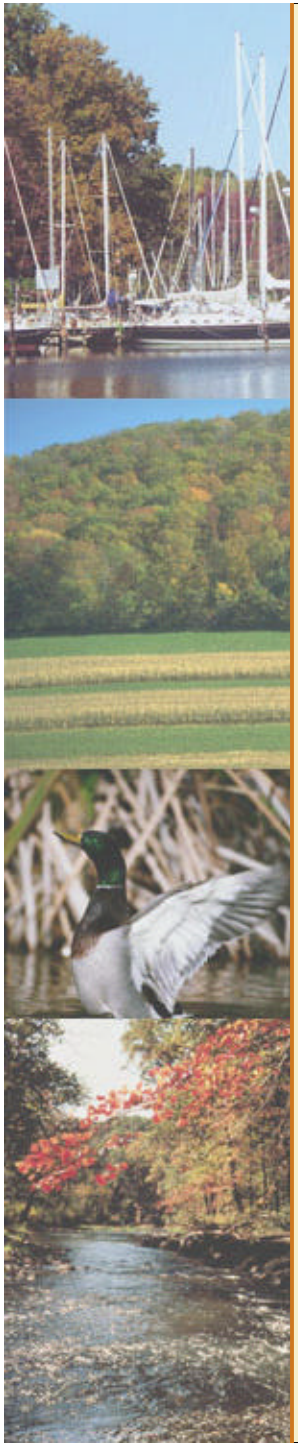
What is the Restoration Goal?

New Water Quality Standards

Oblique View of the Chesapeake Bay and Its Tidal Tributaries



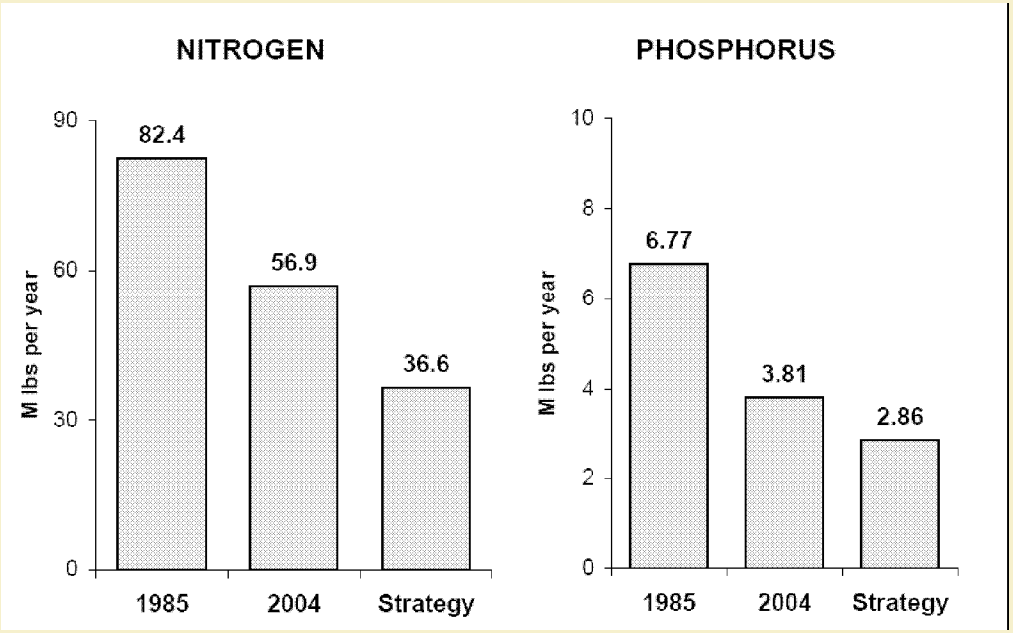




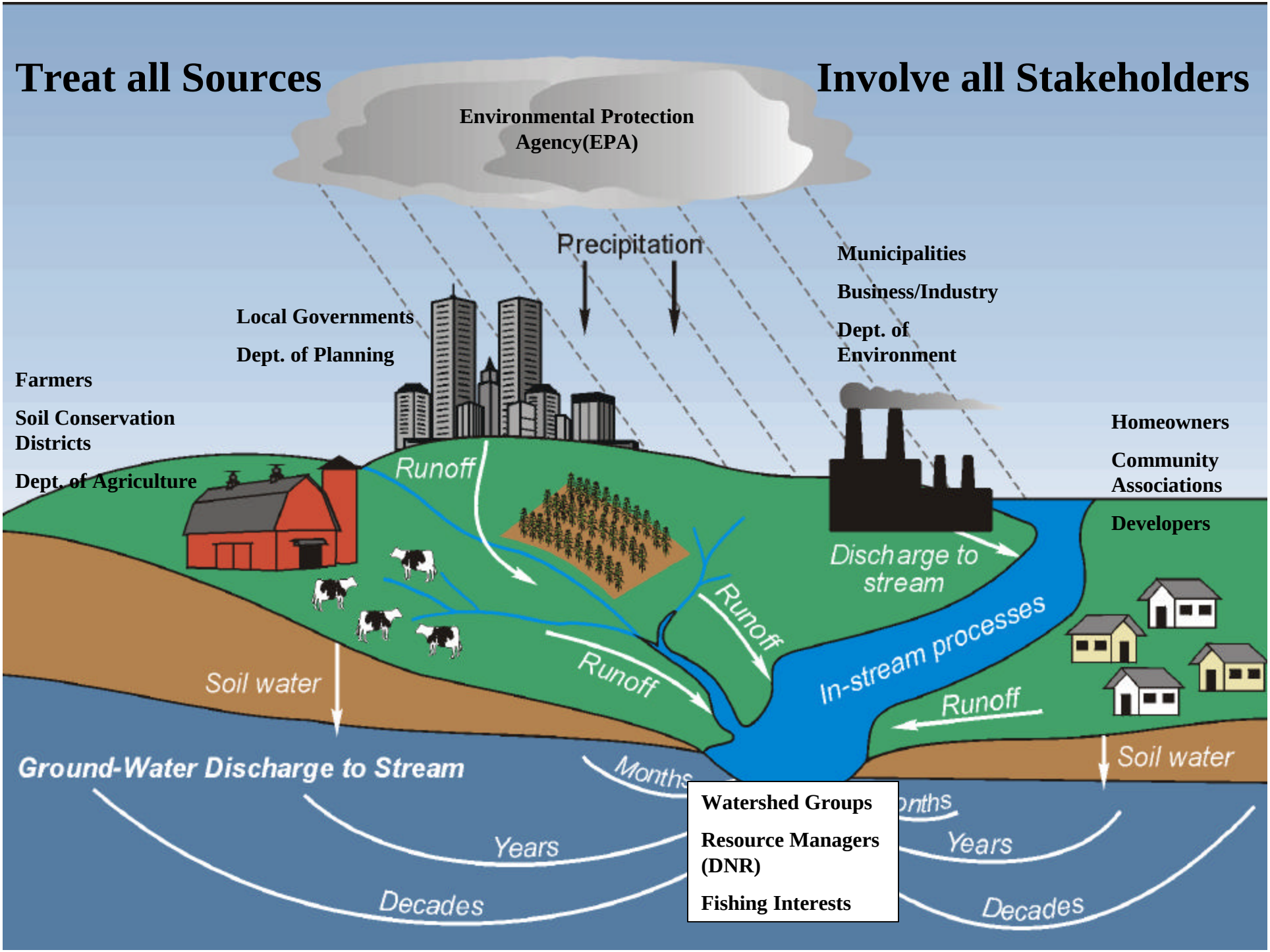
How do we achieve the Standards?

Reduce Flow of Nutrients to Rivers and the Bay

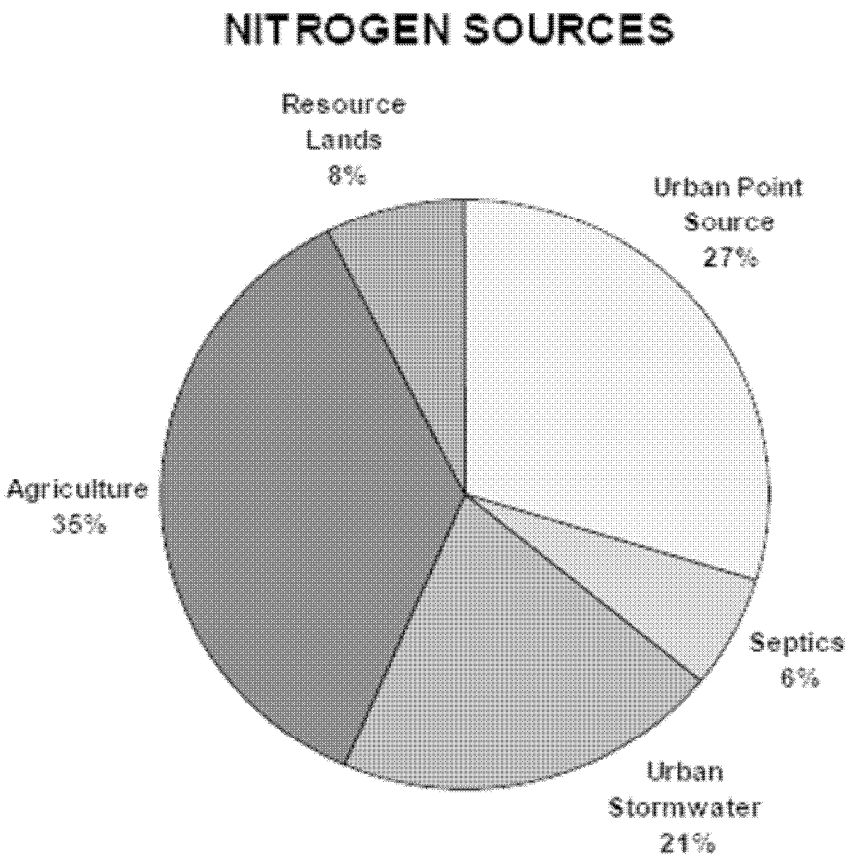
Maryland Nutrient Reduction Goals/Caps

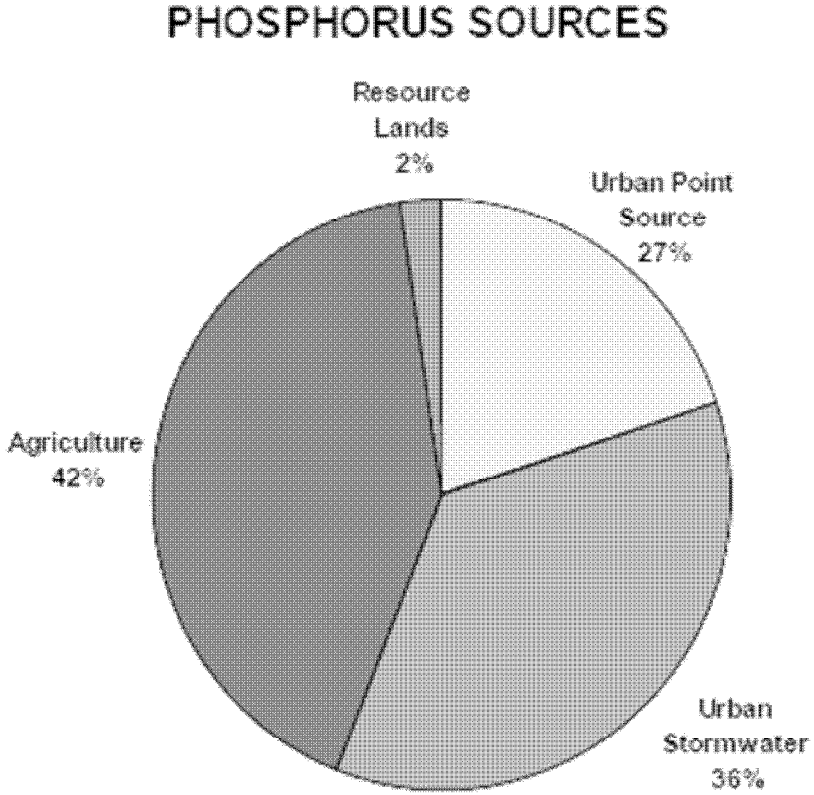


Maintain CAPS on Nutrient LOAD to the Bay

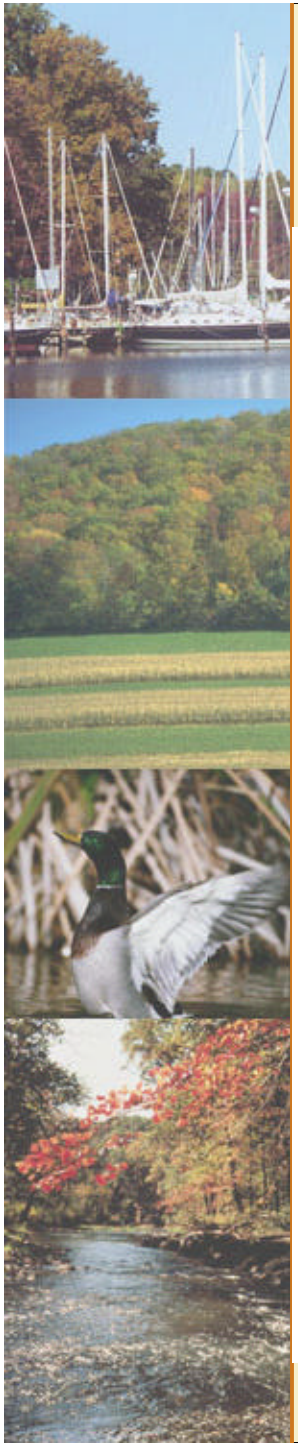

Treat all Sources
Involve all Stakeholders
Environmental Protection Agency(EPA)
Precipitation
Municipalities
Business/Industry
Dept. of Environment
Local Governments
Dept. of Planning
Farmers
Soil Conservation Districts
Dept. of Agriculture
Homeowners
Community Associations
Developers
Runoff
Runoff
Runoff
Runoff
Runoff
Discharge to stream
In-stream processes
Soil water
Soil water
Ground-Water Discharge to Stream
Months
Years
Decades
Months
Years
Decades
Watershed Groups
Resource Managers (DNR)
Fishing Interests

2004 Sources of Nutrients - MD





Data Source: MD DNR & Chesapeake Bay Program Watershed Model V4.3, 2003_Inputs-Outputs_0126051.xls



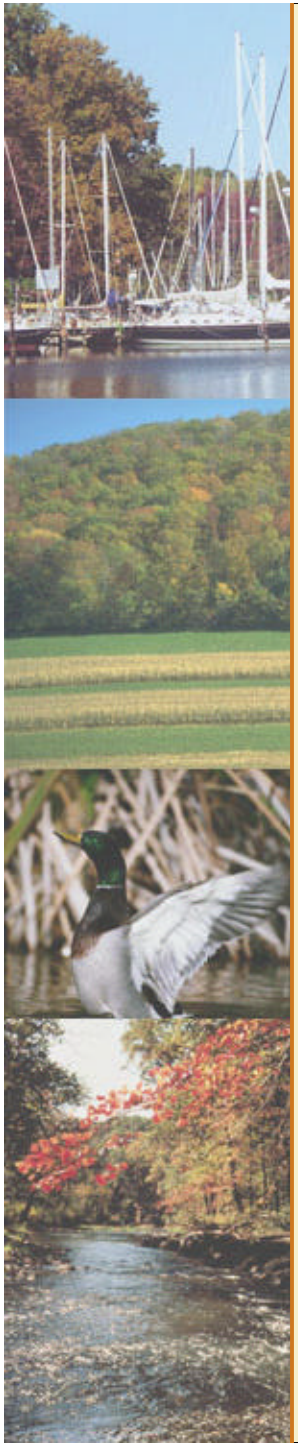
Tributary Strategy

Table 2

Maryland's Tributary Strategy Best Management Practices

Best Management Practices	Units	Full Strategy 1985-2010 Units	Remaining Strategy 2005-2010 Units	Costs (M)
Agriculture				
Soil Conservation & Water Quality Plans	acres	1,364,718	578,830	$202.5
Conservation Tillage	acres/yr	720,219	718,037	$97.7
Cover Crops, Early	acres/yr	800,000	800,000	$192.0
Commodity Cover Crops, Early	acres/yr	150,000	150,000	$24.0
Alternative Crops	acres/yr	50,000	50,000	$10.0
Animal Waste Management - Livestock	systems	2,033	1,016	$84.5
Animal Waste Management - Poultry	systems	1,247	213	$5.7
Runoff Control	systems	1,093	424	$3.0
Nutrient Management	acres	1,364,718	1,364,718	$13.6
Precision Agriculture	acres	300,000	300,000	$33.6
Stream Protection With Fencing	acres	11,506	10,155	$10.2
Stream Protection Without Fencing	acres	29,748	3,448	$2.3
Retirement of Highly Erodible Land	acres	28,922	26,328	$3.6
Buffers Forested - Agriculture	acres	32,506	19,130	$21.8
Buffers Grassed - Agriculture	acres	60,764	57,952	$9.1
Tree Planting - Agriculture	acres	10,712	4,310	$3.0
Wetland - Agriculture	acres	15,678	12,207	$48.6
Horse Pasture Management	systems	7,000	7,000	$30.4
Alternative Manure Management	tons	70,000	70,000	$11.2
Ammonia Emmissions	systems	740	740	$9.6
Phytase Feed Additive	percent	32	16	$8.0
Oyster Aquaculture	trays	12,080	12,080	$1.5
Urban				
Stormwater Management, New	acres	74,486	74,486	$280.7
Stormwater Management, Recent	acres	192,539	117,044	$412.5
Stormwater Management, Old	acres	337,711	337,711	$1,182.0
Stormwater Management, O&M	acres	604,749	86,268	$224.7
Erosion and Sediment Control	acres/yr	60,835	60,835	$2,827.4
Nutrient Management, Urban	acres	737,342	737,342	$12.2
Nutrient Management, Mixed	acres	727,823	727,823	$12.0
Buffers Forested, Urban	acres	1,376	1,098	$1.2
Tree Planting, Mixed Open	acres	5,195	2,043	$8.9
Tree Planting, Urban Pervious	acres	10,390	10,390	$45.3
Stream Restoration, Urban	linear feet	388,679	286,211	$83.8
Sprawl Reduction & Septics				
Sprawl Reduction	acres	21,627	21,627	$0.0
Enhanced Septic Denitrification	systems	347,897	347,897	$2,869.2
Enhanced Septic Denitrification O&M	systems	347,897	49,487	$366.3
Septic Connections	connections	14,047	3,088	$93.7
Point Sources				
WWTPs	BNR, ENR, plus 300,000 lbs/yr TN			$1,069.4
Shore Erosion Control				
Structural & Nonstructural, State	222,316 lbs/yr TN, 145,070 lb/yr TP			$0.0
Total Cost of Implementing Maryland's Tributary Strategy (Million $):				**$10,054.5**

- Plan is specific and has numeric goals
- Air Deposition
- Growth Mgmt
- Stormwater Mgmt
- Waste Water Treatment
- Agriculture BMPs



Tributary Strategy Components

Agriculture:

- Includes over 30 Best Management Practices
- Implementation near E3 (everything, everywhere by everybody)

Developed Lands:

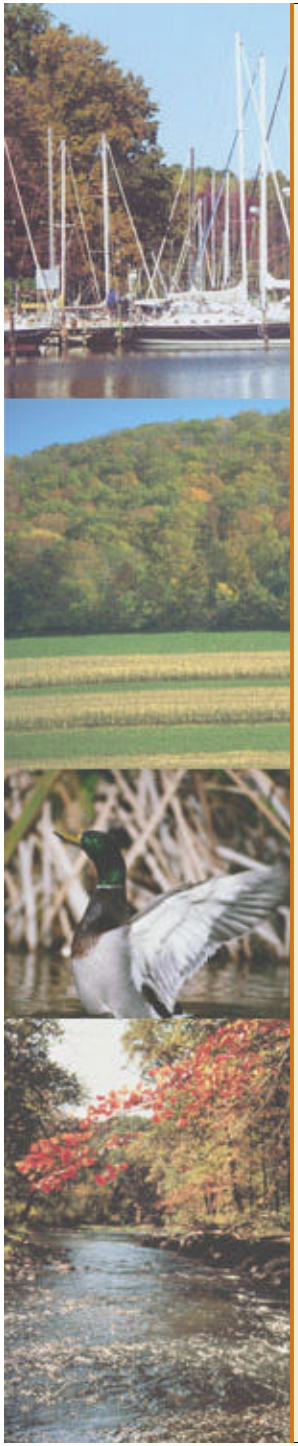
- Implement/enforce SWM regulations
- 40% Retrofit of untreated impervious surface

Septic Systems:

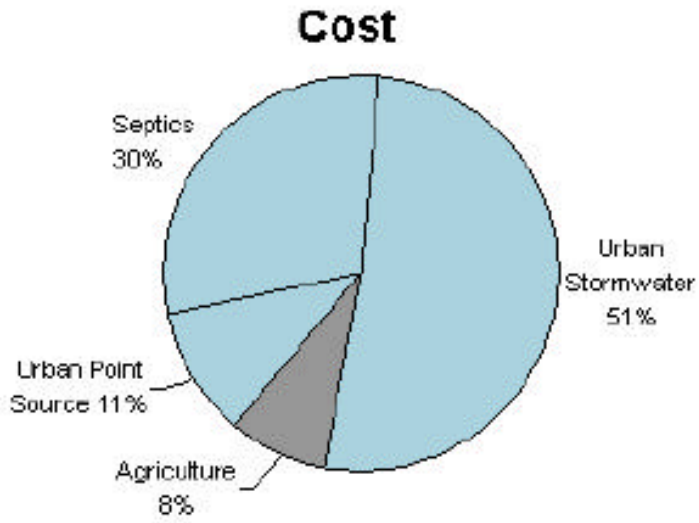
- all new and existing systems use denitrifying technology

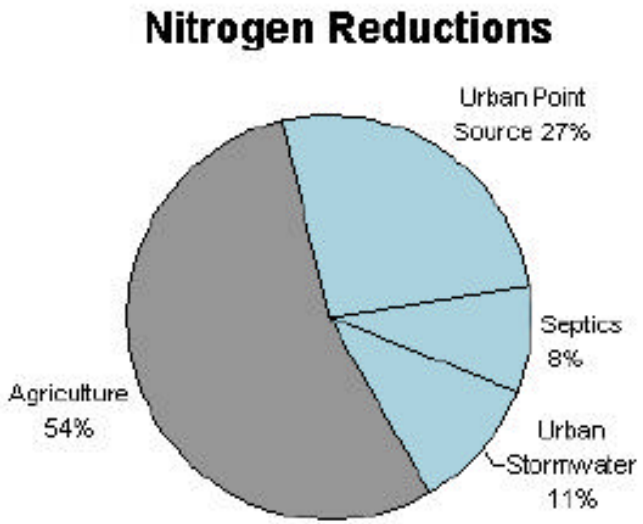
Waste Water Treatment:

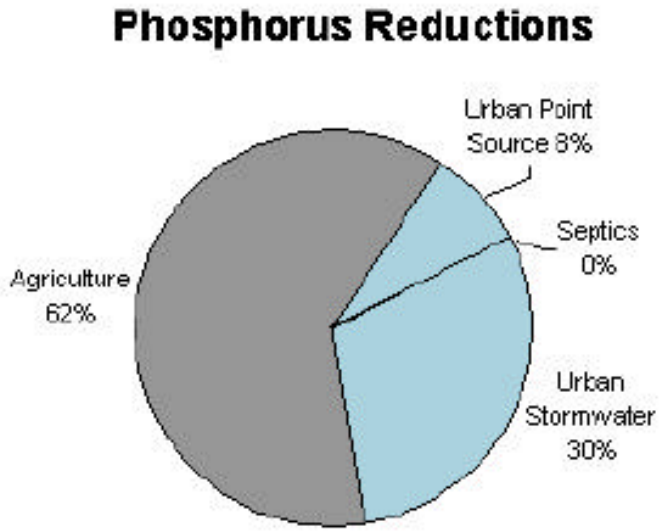
- Annual Load Caps for each plant (sig. and non sig.) based on 2003 design Capacity and ENR



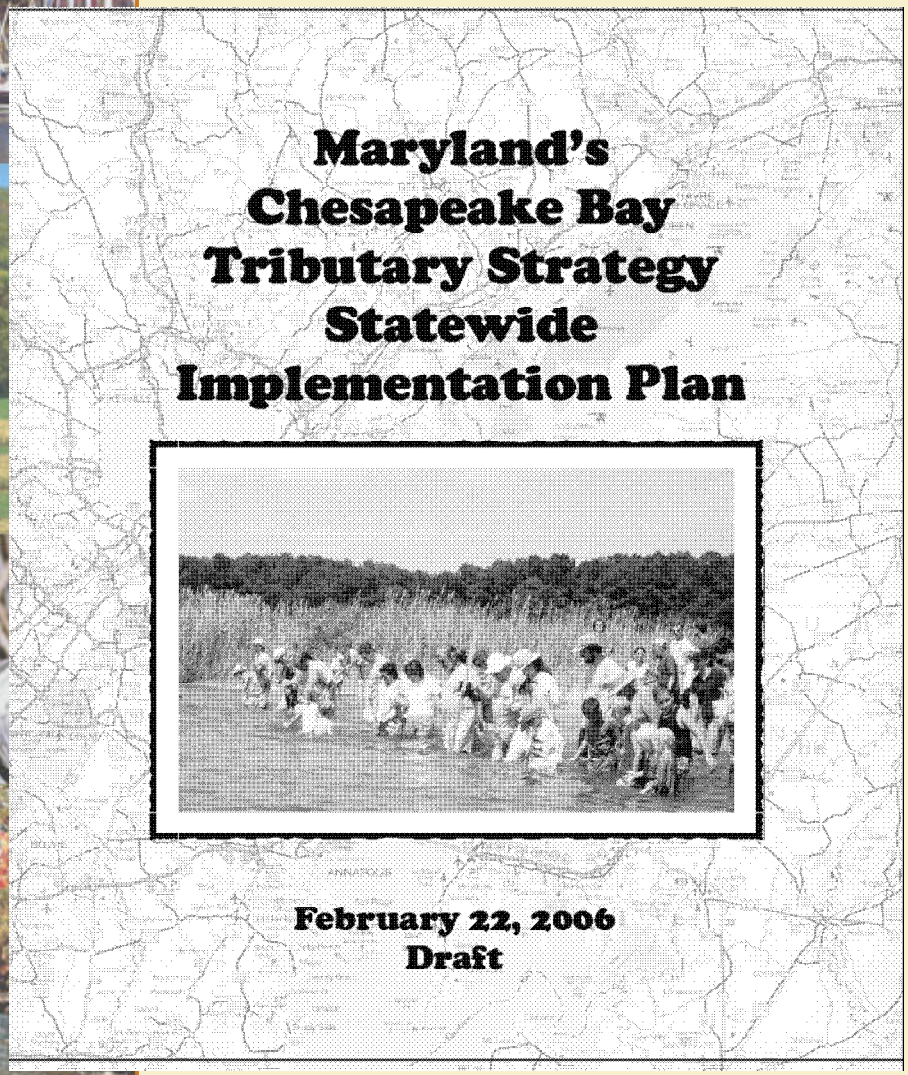
Cost - Benefit





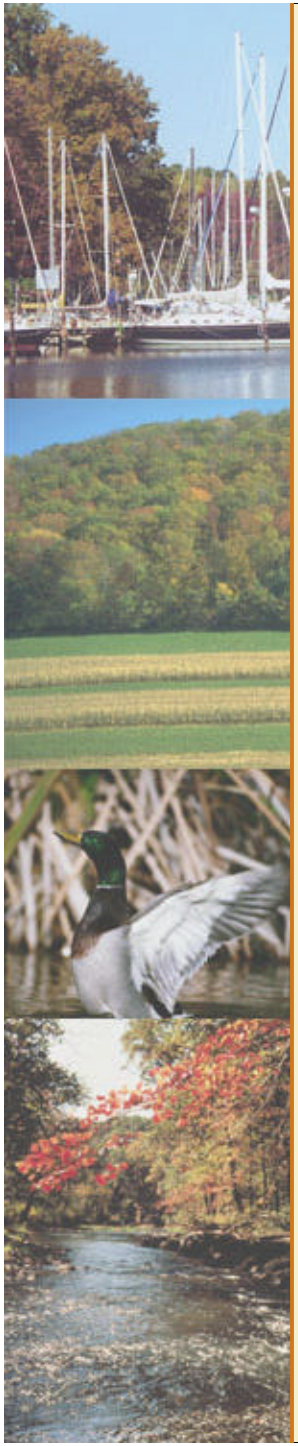


Tributary Strategy Implementation Plan



1. Defines realistic, near term implementation goals and describes **how state programs will achieve those goals**

2. Address future challenges including, program coordination, implementation barriers, stakeholder accountability and cap management/offsets



How Do We Implement the Plan?

Federal Role

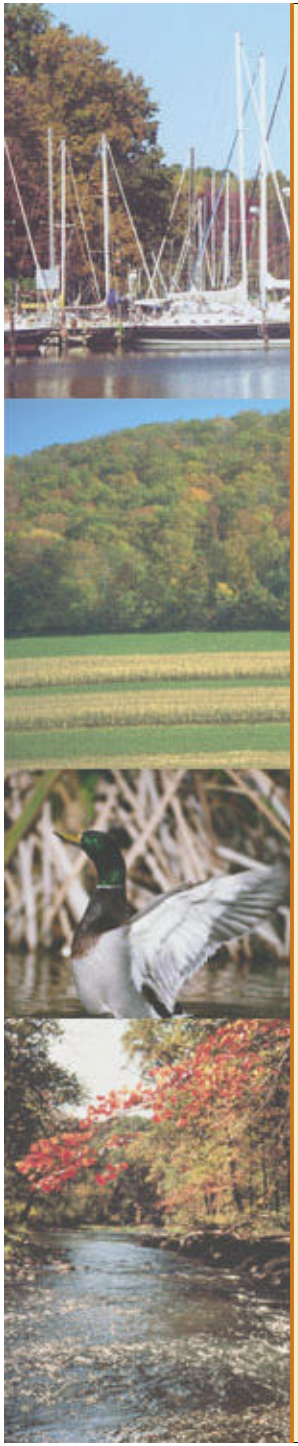
- Farm Bill Programs
- Revolving Loan Funds
- EPA
- Air Quality Controls

Local Role

- Stormwater Management/S&E Programs
- Coordinated/balanced planning process
- Work directly with Farmers and landowners

State Role

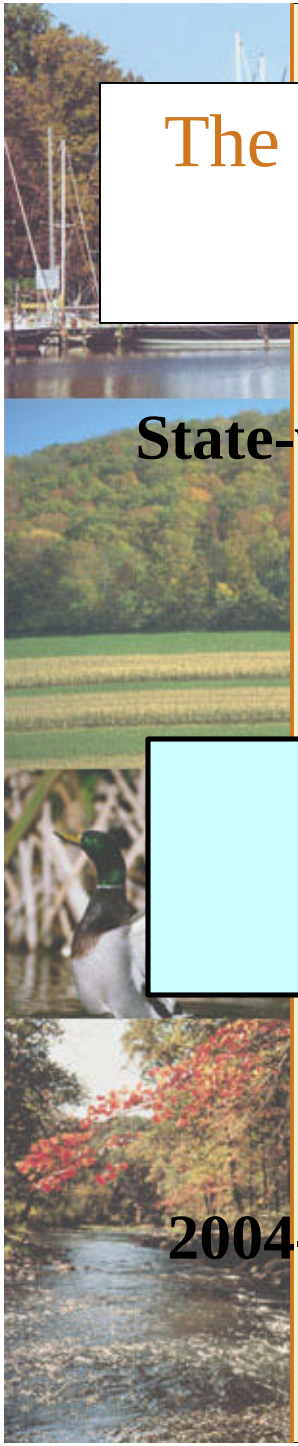
- MACS Program
- BRF - ENR/Septics program
- TMDLs, NPDES permits
- Local Government Assistance Grants
- Land Preservation
- Update Statewide Implementation Plan with new policies and programs



Current Focus - Develop Basin Implementation Plans

- Request from Governor's Bay Cabinet to local elected officials to work with Trib Teams and State in development of basin level plans
- 2 and 6 year implementation schedules by county/district with program assessment
- Meetings with local Government staff this fall
- SCD's and Local Govt's develop basin plans through fall '07.

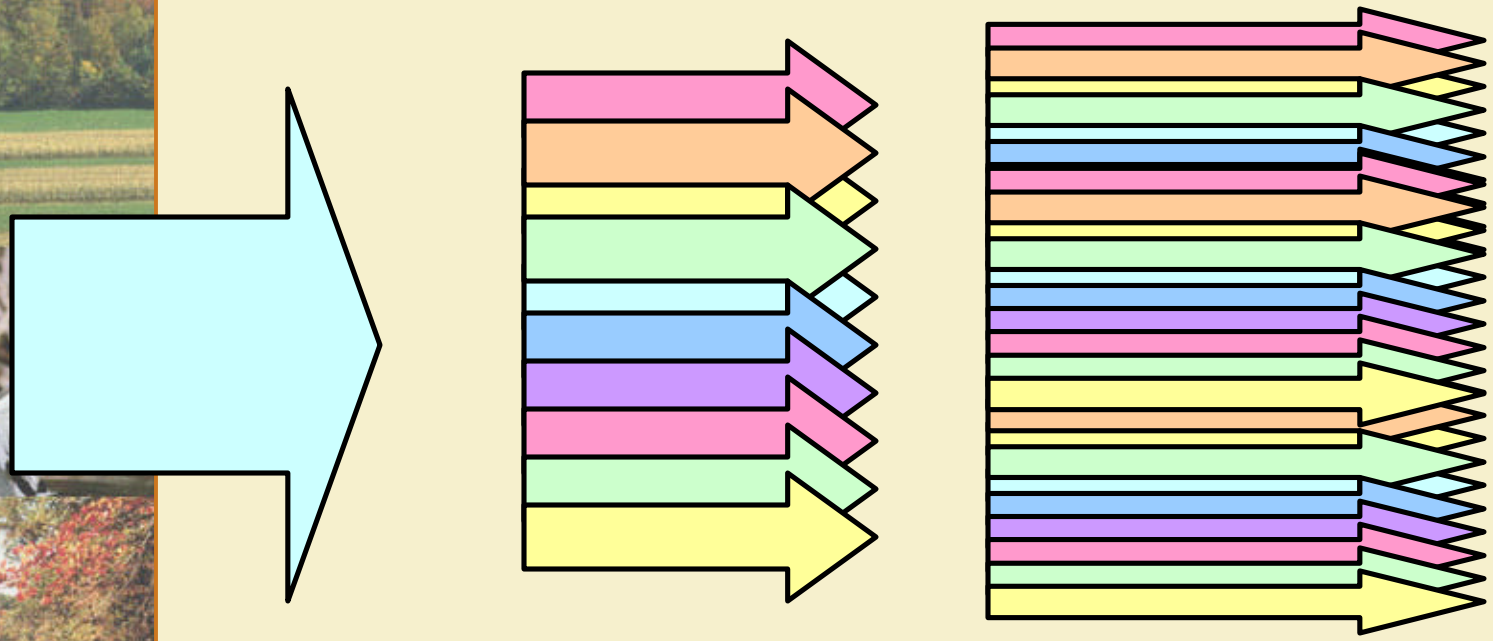
The Relationship of Tributary Strategies and Nutrient TMDL Implementation Planning



State-wide Plan

10 Basin Plans

TMDL Subbasin Plans



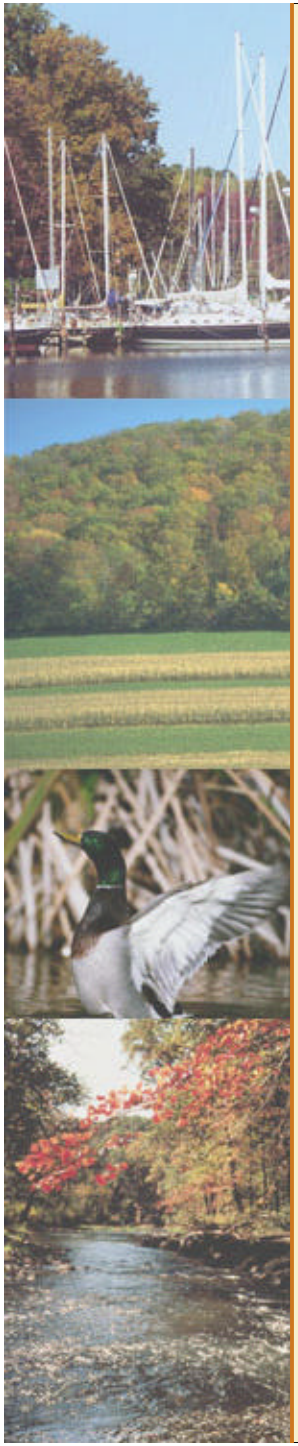
Achieve Water Quality

2004-2006

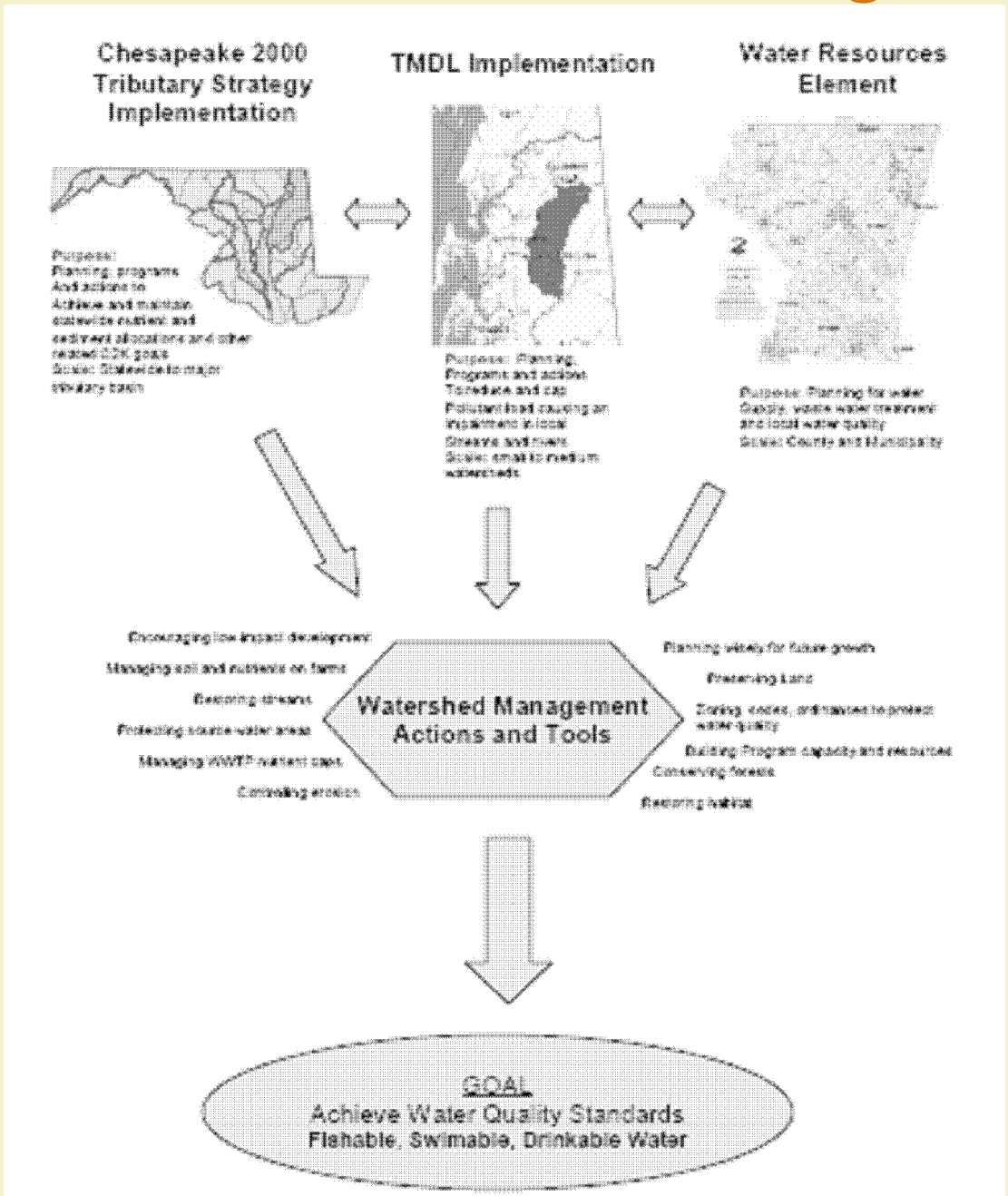
2006-2007

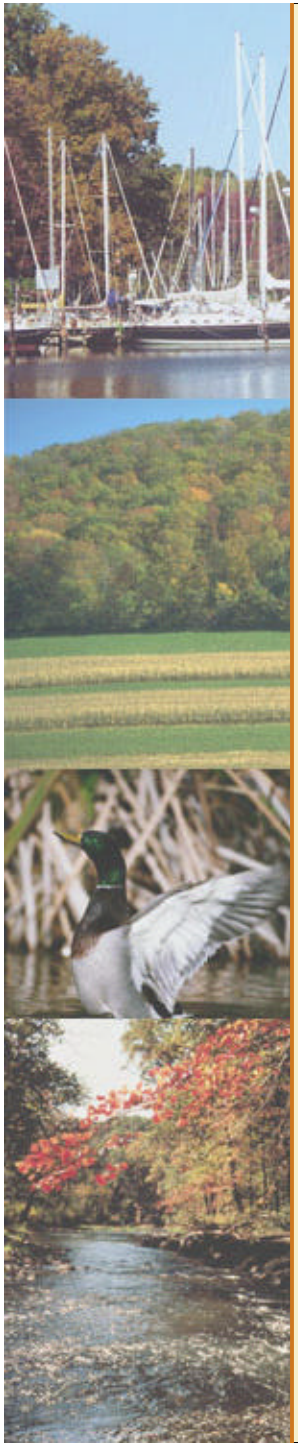
2007-2009

MARYLAND



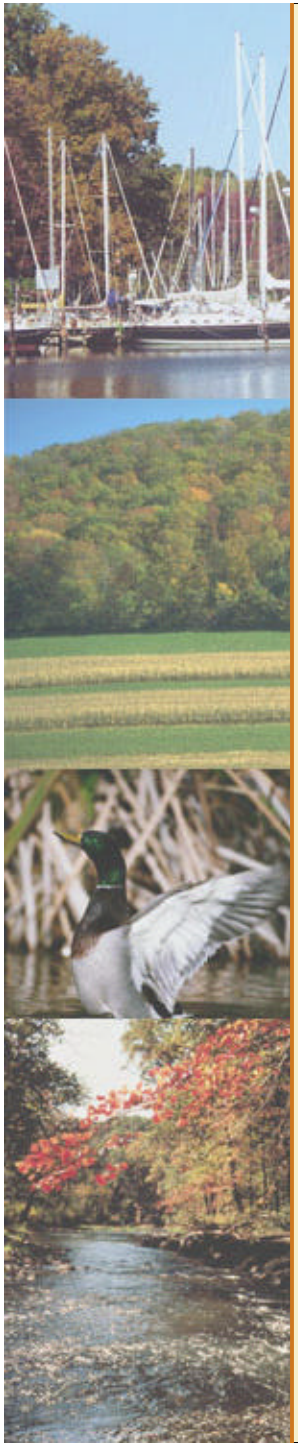
How does it all come together?





DNR's Role in HB 1141

- Provide data for the development of Water Resources Element and Basin Plans
- Provide staff resources for the development of Basin Level Implementation Plans
- Review Comp Plan Water Resources Elements
- Provide Technical and financial support for preservation and restoration actions



Catherine Shanks

Watershed Services,

MD Department of Natural Resources

(410)260-8717

Website – dnr.state.md.us/bay/tribstrat